

Amendments To The Specification:**In The Title:**

Please replace the Title of the Invention on page 1, lines 1-2 with the following amended title:

APPARATUS AND METHOD FOR RETAINING MIRROR, AND MIRROR EXCHANGE
~~NETHOD~~ METHOD

In The Specification:

Please replace the paragraph on page 1, lines 11-19 with the following amended paragraph:

The present invention relates generally to ~~optically~~ optical systems and exposure apparatuses, and more particularly to a method and apparatus for retaining a mirror used in an exposure apparatus. The present invention is suitable, for example, for an illumination optical system and projection exposure apparatus using an extreme ultraviolet ("EUV") region having a wavelength of 200 nm to 10 nm or an X-ray region.

Please replace the paragraphs on page 11, line 26 thru page 13, line 5 with the following amended paragraphs:

The illumination optical system 120 propagates the EUV light, and illuminates the mask (reticle) 150. The illumination optical system 120 includes first to third mirrors 122, 126 and 128, an optical ~~integrator~~ integrator 124, and an aperture 127. The first mirror 122 collects approximately isotropically emitted EUV light. The multilayer film is made of alternately layered, two types of materials having different optical constants, such as molybdenum (Mo) and silicone (Si). For example, a Mo layer has a thickness of about 2 nm,

and a Si layer has a thickness of about 5 nm. The number of layers is about 20 pairs. An addition of two thicknesses of two types of materials is referred to as a film period. In the above example, the film period is $2\text{ nm} + 5\text{ nm} = 7\text{ nm}$. The multilayer film 112 that includes layered 20 pairs exhibits reflectance close to 70 % in the EUV area, each pair having a film thickness of about 7 nm. A method for retaining and exchanging this mirror is applied to an exchange of this mirror. The optical integrator 124 serves to evenly illuminate the reticle 150 with a predetermined NA. The aperture 127 is provided at a position conjugate with the reticle 150 in the illumination optical system 120, and limits an area to illuminate the reticle 150 to an arc shape.

A retention and exchange mechanism of the mirror 122 includes, as shown in FIGs. 1 and 2, a flange 114 provided on a wall ~~122~~ 112 of the vacuum chamber 110 so that the flange 114 may open and close, a cooling mechanism 130 for the mirror 122, an elastic column 140, a fixing shaft 142, and a kinematic mount 146. Here, FIGs. 1 and 2 are schematic sectional and perspective views for explaining the retention and exchange mechanism for the mirror 122.